Physics Numbers
(what every physicist should know)

Sizes
atom: 0.2 – 0.3 nm = 2 – 3 angstroms
nucleus: $\approx$10 fm = 10^{-14} m
wavelength of visible light: 400 nm to 700 nm = 0.4 to 0.7 μm
earth: radius $\approx$ 6000 km

Energies
1 eV = 1.6×10^{-19} J
1 cal = 4.184 J
chemical bond $\approx$ 1 eV or less
nuclear bond $\approx$ 1 MeV
room temperature: kT_{room} = 0.025 eV
visible photon: 2 to 3 eV
solar constant (solar power per square meter striking Earth) 1000 W/m^2

Masses
electron = 9.1×10^{-31} kg = 0.511 MeV/c^2
proton = 1.67×10^{-27} kg = 938 MeV
$m_{proton} \approx 1800\ m_{electron}$

Densities
water: 1 g/cm^3 = 1000 kg/m^3 (cubic meter of water is a metric ton)
air: $\approx 10^{-3}$ water
elements: 2–20 g/cm^3

Speeds
sound (in air) $\approx$ 340 m/s (1 mile per 5 seconds)
light: 3.0×10^8 m/s

Pressure
sea-level air: 14.7 psi $\approx 1.0 \times 10^5$ Pa   (1 Pa = 1 N/m^2)

Money
1 kW·hr $\approx$ \$ 0.10 = 10 cents

Constants (SI units)
$k_B = 1.38 \times 10^{-23}$ $N_A = 6.0 \times 10^{23}$
$e = 1.6 \times 10^{-19}$ $h = 6.6 \times 10^{-34}$ ($\hbar \approx 1 \times 10^{-34}$)
$G = 6.7 \times 10^{-11}$ $\varepsilon_o = 8.9 \times 10^{-12}$

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